3:15

849-6 Percutaneous Transluminal Septal Myocardial Ablation in Hypertrophic Obstructive Cardiomyopathy: Identification of the Target Vessel by Myocardial Contrast Echocardiography

L. Faber, H. Seggewiss, D. Fassbender, S. Strick, N. Bogunovic, U. Gleichmann. *Dept. of Cardiology, Heart Center NRW, Ruhr-University Bochum, Bad Oeynhausen, Germany*

Background: Percutaneous transluminal septal myocardial ablation (PTSMA) by alcohol injection into septal branches (SB) is a new treatment option for pts. with HOCM. Identification of the perfusion area of the target vessel by myocardial contrast echo (MCE) has been introduced as an additional method besides hemodynamic estimation by probatory balloon occlusion (PBO).

Methods: We compared the results of 30 pts. with identification of the TV by PBO alone (Group I) and the following 53 pts. with additional MCE (Group II). In these pts. PTSMA was done only if the opacified septal area matched with the area of LV outflow tract gradient (LVOTG) formation estimated by colour doppler echo.

Results: In 5 (10%) pts. of Group II the target vessel for PTSMA originated atypically from a diagonal/intermediate branch of the LCA. Furthermore, the following differences were observed.

	Group I	Group II	p
SB (n)	1.28 ± 0.52	1.0	0.0003
Alcohol (ml)	3.0 ± 2.4	3.2 ± 0.7	0.09
LVOTG reduction (red.) (%)	04 ± 38	70 ± 24	0.03
LVOTG red. >50% (%)	60	88	0.04
Permanent pacer (%)	20	10	0.19
Improvement at 3 months (NYHA)	1.3 ± 0.9	1.0 ± 0.8	0.03
LVOTG red. at 3 months (%)	00 ± 48	88 ± 18	0.04

Conclusions: Identification of the target vessel by MCE besides hemodynamic estimation with PBO seems to result in a favourable short- and mid-term outcome after PTSMA.

850 Catheter Ablation of Supraventricular Arrhythmias: New Approaches/Technologies

Tuesday, March 31, 1998, 2:00 p.m.–3:30 p.m.
Georgia World Congress Center, Room 267W

2:00

850-1 The Distal end of the Atrioventricular Nodal Artery Serves as a Landmark Identifying the Risk of Complete Heart Block During Radiofrequency Catheter Ablation of the Slow Pathway in Atrioventricular Nodal Reentrant Tachycardia

J.-L. Lin, L.-P. Lai, L.-J. Lin, Y.-Z. Tseng, W.-P. Lien, S.K.S. Huang. *National Taiwan University Hospital, Taipei; National Cheng-Kung University Hospital, Tainan, Taiwan*

Background: Anatomical variation of the location of atrioventricular node (AVN) within the Koch's triangle always presents a threat of inadvertent complete heart block during radiofrequency catheter ablation (RFCA) of the slow pathway (SP) in AVN reentrant tachycardia (AVNRT). The need for identifying a risk landmark is important.

Methods: We hypothesized that the distal end of the AVN artery (NAE) be the landmark for AVN location. Thus, we studied the spatial relations between the His bundle recording site (HB), the NAE and the final RFCA site (RFS) for the SP by orthogonal coronary arteriography and coronary sinus (CS) venography in 57 consecutive patients (pts) with AVNRT who received stepwise temperature-monitored SP RFCA. There were 20 men, 37 women, mean age 54 ± 11 years.

Results. 48 pts (group A) achieved uneventful success, while 9 (group B) were complicated by transient (7 pts) or permanent (2 pts) complete heart block. The spatial relationships for group A and B were listed as below.

Group	HB-NAE	HB-RFS	NAE-RFS	NAE-CSO
A (RAO)	7 ± 4	15 ± 4	7 ± 4	
(LAO)	8 ± 4	15 ± 4	7 ± 4	8 ± 5
B (RAO)	11 ± 7*	12 ± 7	0.6 ± 0.9**	
(LAO)	13 ± 5**	13 ± 5	-0.2 ± 1.1**	-0.8 ± 4.9

all data in mm & mean ± SD, distance between 2 sites. *, $P < 0.05$; **, $P < 0.005$.

The distal end of AVN artery was as close as less than 1 mm to the final ablation site in 9 of the 9 group B pts, and at least 2 mm apart (mean 7 ± 4 mm) for all 48 group A pts.

Conclusions: A close proximity of the RFCA electrode to the site of AVN artery ending, i.e. the AV node location, carries a high risk of complete heart block during RFCA of the SP in AVNRT. The unusually low-setting of the AV node within the Koch's triangle is probably the major cause of the inadvertent complication.

2:15

850-2 Left and Right Atrial Linear Catheter Ablation Using a Novel Cooling Design

S.B. Sloan, M.Y. Lee, B. Vanderbrink, M. Vecchiotti, J. Karratt, M. Maguire, J. Gaiser, A. Valencia, C. Foote, M. Homoud, M. Link, N.A.M. Estes, III, P.J. Wang. *Tufts New England Medical Center, Boston, MA and Medtronic Inc., CardioRhythm, Sunnyvale, CA, USA*

Background: Linear catheter ablation of the atria has been proposed as a technique for the treatment of atrial fibrillation. However, radiofrequency ablation (RF) may have limited penetration into the atrial wall, particularly in regions of trabeculation and anatomic complexity.

Methods: We designed and tested an RF linear ablation catheter with a novel cooling design utilizing 4 electrically active coil electrodes. In order to simulate ablation in the human atria most accurately, we employed a closed-chest porcine model (mean weight 79 kg). We delivered a total of 10 right and 4 left atrial lesions in 4 animals. RF energy was delivered for 60 seconds at 25–50 Watts through each of the 4 electrodes. Lesion size was determined acutely after triphenyltetrazolium chloride staining.

Results: The right atrial lesions had mean dimensions of 26.9 ± 9.8 mm long × 8.1 ± 2.5 mm wide × 5.4 ± 1.7 mm deep. The left atrial lesions had mean dimensions 16.5 ± 12.1 mm long × 3.5 ± 2.9 mm wide × 2.6 ± 2.1 mm deep. All but one lesion was transmural. No significant thrombus was observed, except in one lesion in which there was an electrode failure. No lesions demonstrated perforation.

Conclusions: We conclude that this novel cooling design may have significant advantages in creating long linear transmural lesions without coagulum formation and has promise for ablation in the anatomically complex human atrium.

2:30

850-3 Catheter Ablation of Atrial Fibrillation Using a Non-Fluoroscopic System

C. Pappone, F. Lamberti, M. Rillo, G. Vicedomini, A. Conversano, M.L. Loricchio, P. Mazzone, S.B. Haim, S. Bianchi, S.L. Chierchia. *IRCCS H San Raffaele, Milano, Italy*

Catheter ablation (*A*), replicating the Maze operation has been recently proposed for the treatment of drug-refractory (DR) atrial fibrillation (AF). Difficulties in achieving continuous linear lesions (LL). Identification of gaps (G) in A lines is currently limited by the resolution of fluoroscopic imaging. We report our initial results in AF *A* using a 3 dimensional (3D) non-fluoroscopic (NF) imaging system. We treated 13 patients (Pts) with symptomatic, frequent (>2 episodes/week), long (mean duration 11 ± 7 hours) and DR (4 ± 1 drugs) AF episodes. Both atria have been approached using magnetically locatable catheters (NAVISTAR) and a NF mapping and navigation system (CARTO). All procedures included: mapping 3D atrial geometry; obtaining atrial activation and propagation maps; planning the routes for *A* lines; delivering radiofrequency (RF) energy in a temperature-guided mode; and monitoring the tip location on the 3D atrial map. Each A site was tagged on the 3D map in order to trace A lines and to mark catheter position. Verification of A line completeness was obtained by evaluating: a) the contiguity of tags, and b) the modification of atrial activation and propagation maps. A distance >5 mm between tags was considered as an *A* line G. Gs were re-mapped and RF energy was reapplied if atrial activity could be recorded in those sites. *The following continuous LL were created in the left atrium:* from superior (*S*) lateral (*L*) pulmonary vein (PV) to S medial (*M*) PV; from *SM* PV to inferior (*I*) *M* PV; from *SL* PV to *IL* PV; from *IM* PV to mitral ring; from *IL* PV to mitral ring. Lesions in the right atrium were: from *S* to *I* vena cava (VC); from *S* VC to the anterior tricuspid ring; from postero-septal aspect of the *I* VC to tricuspid isthmus. The average procedure duration was 353 minutes (mean radiation time of 134 minutes). One single acute complication occurred, consisting in sinus node dysfunction requiring a permanent PM. After 2–20 weeks, 7 Pts are arrhythmia-free without any drug; 4 Pts have become responsive to previuos ineffective drugs; 2 Pts are still symptomatic for DR AF. In conclusion, 3D mapping improves the efficacy of A for the treatment of DR AF by facilitating the creation of continuous atrial LL and the verification of LL continuity.

TUESDAY ORAL